

## RESCUE DRAGGING BAG

**[0001]** The invention refers to a device for the transport and rescue of persons from dangerous environments in accordance with the preamble of claim 1.

**[0002]** The problem when rescuing human life from burning houses or buildings is in many cases the failure to be able to speedily remove the persons from the area of danger. This is in particular true for such public buildings as hospitals or old age homes, where many ailing or frail persons who are not ambulatory need to rely on outside help in order to leave the building. Rescue services have generally only a certain number of rescue stretchers available and often persons to be rescued have to be carried by at least two rescuers over several floors and stair cases. In addition, there is often a problem with the rescue stretchers to which the person to be rescued is strapped, in particular, the ability to transport the stretcher through very narrow stair cases or moving them around very narrow stair case turns and thus, requiring a great amount of human effort and strength. In most such cases, the stretcher cannot even be carried in a horizontal position, which further aggravates the transport and consumes valuable time. In a fire, firefighters are usually the first ones arriving at the scene for persons to be rescued. At that time, the rescue stretcher is first ordered, which again is time consuming and thereby delaying the rescue or, the injured person is moved away from the danger zone, which proves difficult and time consuming when the person is injured or disabled.

**[0003]** Besides stretchers, other rescue means are also known such as rescue cloths, rescue mattresses and dragging foils. US publication 5,189,746 discloses a device for emergency evacuation of persons with limited mobility from a building. The device includes an elongated, planar rigid base element with a fire resistant outer shell for protecting the person being transported on the base element. The underside is provided with carpeting in order to provide greater

ease when dragging the device across the floor. The rescue device also includes adjustable belts for securing the person to the device. Handles for carrying or dragging the rescue device are arranged laterally at the side ends of the base element. Thereby the rescue device can be pulled or lifted from each end. The draw-back is that the base element, which is rigid, renders the rescue device inflexible and hard to handle. Since the base element of the device is rigid, it behaves more as a stretcher when transport through a narrow stair case is required. Thus, due to the rigid nature of the base element, the device cannot be folded or rolled so that it cannot be carried in a rescue operation as a precaution.

**[0004]** From publication US 5,050,254, a device is known, which is formed from an elongated fire resistant canvas, which can be folded into a bag-like case. Straps provided at the side walls of the canvas are used for securing the person to be evacuated. At one end of the canvas, carrying straps are provided for pulling the baglike case. The bag can be advantageously rolled up so that it can be easily carried in case of an emergency. Since the bag is not reinforced, dragging it across a surface thus provides little protection to the person to be rescued inside.

**[0005]** An object of the present invention is to provide a simple and cost efficient device that can be easily carried by rescue personnel and with which, in an emergency, a person to be rescued and unable to walk, can be efficiently removed from the danger zone, and wherein the device provides sufficient protection and stability during transport and in case of fire, protection against heat and fire.

**[0006]** This object is realized by means of a device which comprises the elements as set forth in claim 1.

**[0007]** According to the present invention, the rescue dragging bag for humans includes a heat resistant foil or canvas. Arranged at a canvas center section are overlapping lateral folding panels and at a longitudinal end area of the central section, a pocket is formed for receiving the feet of the rescued person. Straps are provided at the center section at the outside, which are connectible to each other after the overlapping lateral panels have been folded over the person in order to securely strap the person to be rescued into the rescue bag. The outside of the foot pocket as well as at least a section of the outside of the center section of the canvas are coated with an abrasion and tear resistant fabric which, on the one hand facilitates the dragging of the rescue bag, and on the other hand, is suitably abrasion resistant upon dragging the bag. Provided at the outer side edges of the bag center section, at least in the head area, are three carrying straps and in the area of the foot pocket at least one carrying strap for carrying or dragging the rescue bag. On the inside of the bag, a support is provided, made from felt, for protecting the person to be rescued against impacts from rough surfaces when being dragged. The advantage of the rescue bag according to the present invention as compared with the devices used in conventional rescue techniques is, on the one hand, the flexibility of handling the rescue bag and on the other hand, that it is possible for a single person to carry out the rescue operation in transporting the injured or removing the injured from the area of danger. Thus, in rolled-up form, the rescue bag can be ready for use in an emergency situation in which fire fighters or rescue personnel are in action, whereby it is possible to carry the rolled-up bag strapped to the respiratory equipment. In an emergency situation, the rescue bag is unrolled in seconds, ready for placing the person to be rescued inside the bag and covering the person for protection with the foldable side panels. Subsequently, the person inside the bag is secured by connecting the belt bands that are provided at the outside of the bag center section and to be transported away by one or more persons from the immediate danger zone. In most cases, a stretcher is not available at the moment of emergency and also is too bulky to be taken routinely to an emergency site by rescue personnel. In addition, recovering

an injured person on a stretcher or a rescue cloth requires the input of several persons. By dragging a person to be rescued from the danger zone, much less energy is required and can also be done by a single person. Likewise, this reduces the time it takes to carry out the rescue and narrow stair cases no longer pose a problem, due to the flexible nature of the rescue dragging bag. Due to its configuration and flexibility as well as the characteristics of its material, the rescue bag is not only well suited for transport but also provides protection against heat and flames. On the one hand, a rescue operator who carries the rescue bag can protect himself against the fire using the unrolled bag. On the other hand, with the rescue bag, a person trapped in a burning vehicle can for example be protected against flames until the trapped person is able to be recovered from the accident vehicle which greatly reduces the danger of burns.

**[0008]** Further advantages of the invention follow from the dependent claims and from the following description, in which the invention is described in further detail with reference to an embodiment as illustrated in the schematic drawings.

**[0009]** It is shown in:

- FIG. 1 a top view of the rescue dragging bag in schematic illustration;
- FIG. 2 the rescue dragging bag showing a person occupying the bag protectively covered by the lateral folding panels and secured in the bag with bands;
- FIG. 3 two different embodiments of the rescue dragging bag;
- FIG. 4 the rescue dragging bag in use;
- FIG. 5 the rescue dragging bag rolled-up not in use and carried by emergency rescue personnel.

**[0010]** Throughout all the Figures, same or corresponding elements are generally indicated by same reference numerals and the description refers to all figures unless otherwise noted.

**[0011]** FIG. 1 shows a top view of the rescue dragging bag 1 in schematic illustration. The rescue bag 1 includes a bag center section 2 and laterally extending from the center section 2 on each side are overlapping lateral folding panels 3, 4. These lateral folding panels 3, 4 are sewn to the center section 2 in lengthwise fashion. The longitudinal end area of the center section 2 is formed from the extension of the center section 2 into a pocket 5 for receiving the feet of the person to be rescued. This foot pocket 5 protects the feet and prevents the person sliding out from the rescue bag 1 during transport. The foot pocket 5 is formed by a fold-over of an extension of the center section at the lower end area of the center section 2. The part of the canvas extension which is folded over is then sewn to the side edges 6 of the center section 2, thereby forming a pocket. Provided in the area of the center section 2 are means for firmly holding the lateral folding panels 3, 4 together, such as for example, bands 7 connected to the outer edges of the center section 2. Bands 7 can be quick-operating closure straps with snap buckles 8 or plug buckles. These facilitate the fast opening and closing or the drawing together of the straps to thereby realize the rescue of the person in the rescue dragging bag 1. The bands 7 are preferably of the same material as the canvas of the rescue bag 1. Should a small person or a child be transported in the rescue bag 1, the bands 7 can be crossed in the chest area and connected to the opposite corresponding band portions. This prevents, that band 7 becomes for example lodged at the level of the neck area, which can be annoying to the person to be rescued or can even lead to injuries. The lateral folding panels 3, 4 can also be provided with a hook and loop fastener 13, wherein the respective hook or loop material is sewn directly onto the lateral folding panels 3, 4. In that case, straps or bands are not necessary for holding the lateral folding panels 3, 4 together. The outside of the foot pocket 5 and the outside of at least the lower half of the canvas center section 2 has a coating of

an abrasion and tear-proof fabric material which is glued, hot-glued or sewn to the center section 2 and foot pocket 5. The lower seams can also be covered by gluing strips of coating material over the seams of the rescue bag 1 in order to protect them from wear when dragging the bag 1 over rough, hard material such as for example concrete. Suitable material for producing the center section 2 with its integrally formed foot pocket 5 and the lateral flaps or lateral folding panels 3, 4 sewn to the center section 2 are glass fiber fabric which due to its heat resistance and durability is especially suitable or for example, a mixed fabric material known commercially under the trademark Kevlar® or Panox®. Of course, any other suitable material with the properties of heat and tear resistance can also be used for the production of the rescue bag 1. An outer coating 10 at the underside of the center section 2 and the outside of the foot pocket 5 can be for example from a Kevlar® material with a polyurethane coating. On the one hand, this outer coating 10 should confer certain stability to the rescue bag 1 but at the same time remain flexible. When drawing together the bands 7, the center section 2 with the outer coating 10 is laterally lifted and forms a shell, which is designed to protect the person in the rescue bag 1 when the rescue bag 1 is dragged across an uneven surface or across stairs. On the other hand, the outer coating 10 also protects the canvas and the canvas seams as well as the foot portion 5 from abrasion when dragging the rescue bag 1 across the floor. Hereby is especially the area of the foot portion 5 under stress. If the outer coating 10 is too worn or used up, the defective spot can easily be repaired by placing a patch of outer coating 10 and hot-gluing it to the outside of the bag in order to repair the bag. In order to protect the rescue bag 1 in the area of the foot pocket from too much abrasion, this section can be additionally provided on the underside of that section with lamella. Since the outer coating 10 is also heat resistant, the ability of the rescue bag 1 to act as a heat screen is increased. The materials used permit short term peak temperatures of over 500 degree centigrade without igniting the material. The interior of the rescue bag is covered with a mat 11 which is for example, made from felt. This mat 11 reinforces the center section 2 and provides additional protection to the person to be transported from heat and

bumps while the bag is being dragged. At the head end section of the center section 2 and at the side edges 6 of the center section 2 and in the area of the foot pocket 5, carrying straps are arranged, which serve the purpose of transporting the person secured in the bag by carrying or dragging. When the rescue bag 1 is being dragged by two persons, they grab the carrying straps 9 which are located laterally in the area of the head or shoulders of the person in the bag. Thus, the carriers can retain eye contact with the person in the rescue bag 1. Advantageously, several carrying straps 9 are disposed at the side edges 6 so the rescuers can grab the rescue bag 1 adjusted to the size of the person to be rescued in the respective area of the head or the shoulders. In embodiments modified for special use of the rescue bag 1, through reinforcements of the carrying straps 9 and the bands 7, it is possible to carry out rescues with the aid of ropes if they are necessary for example in rescues from a shaft or rescues made from some heights.

**[0012]** FIG. 2 shows a person in a rescue bag 1 protectively covered by the lateral folding panels 3, 4 and secured in the bag with bands 7. In the area of the lower body and the feet, the outer coating 10 can be recognized at the outside of the foot pocket 5 of the bag center section 2. The head is supported by the felt mat 11 in the interior of the rescue bag 1. The body is entirely and protectively wrapped by the rescue bag material and secured in the rescue bag 1 by means of the bands 7.

**[0013]** FIG. 3 shows two variants of embodiments of the rescue bag 1. The left hand illustration shows a rescue bag 1 wherein quick fastening bands 7 with fastener 8 are arranged at the lateral edges of the center section 2. The right hand illustration shows a rescue bag 1 wherein the hook and loop fasteners 13 are arranged at the lateral folding panels 3, 4. The hook and loop material of the fastener 13 is thereby sewn directly to the lateral folding panels. The person to be rescued is placed into the rescue bag 1 and protectively covered by the lateral folding panels. 3, 4. To do this, the lateral folding panels are pulled tightly

towards each other and folded in overlapping manner such that the hook and loop tape material of the fastener sewn to the side panels match up to the corresponding hook and loop tape 13 of the folding side panel 4 for engagement. In this manner a person can be quickly wrapped into the rescue bag 1 and transported away.

**[0014]** FIG. 4 shows the rescue dragging bag 1 in operation. The person is shown, as in FIG. 2, wrapped into the rescue bag 1 and is being dragged by two fire fighters across stairs. The outer coating 10, in conjunction with the felt mat 11 disposed on the inside of rescue bag 1, dampens the impact from the stairs and protects the person to be rescued during the dragging of the rescue bag 1. The body of the person to be rescued is almost entirely covered by the heat resistant material of the rescue bag 1, thereby being protected from the heat and flames. Also, if necessary, the face of the person can be covered by the lateral folding panels 3, 4. The person to be rescued is wrapped, similar to a mummy, and in this manner can be removed quickly from the danger zone by either dragging or carrying. Due to its flexibility, the rescue bag 1 can be also dragged or carried across stairs or through narrow turns in a stair case. It is also possible that at narrow passages the rescue bag can be dragged by a single person. In this manner, it is possible to rescue an injured person in simple manner very quickly away from the danger zone into a secure environment and to transfer the person to be rescued there to other rescue personnel for further aid.

**[0015]** FIG. 5 shows a fire fighter who is equipped with respiratory equipment and who carries next to the oxygen tank a rolled-up rescue bag 1. The rescue bag 1, which is attached to the oxygen tank by means of strap 12, is ready for operation with a simple manual move. The roll is placed next to the person to be rescued and unrolled with its side panels 3, 4 folded open. The rescuers lift or roll the injured person onto the center section 2 of the bag and fold the lateral folding panels 3, 4 so they overlap across the person, then the bands 7 are drawn together and the snap fastener 8 closed. Thus, the injured person is ready in the



shortest time to be transported away in the rescue bag 1.

**[0016]** The rescue bag 1 can be utilized not only in rescue operations such as carried out by fire fighters or rescue personnel, but can also be utilized in permanent places such as in hospitals and old age homes, for example in a situation where a disabled or injured person must be transported away from a danger zone. Patients are often too heavy to be carried by nursing personnel. Even a not so strong person can transport a heavy person in the rescue bag 1. In this area of application of the rescue bag 1, can likewise be used as a heat shield or as a protective cloth against flames.

**[0017]** The rescue bag 1, which can be produced in a simple and cost effective manner, can be manufactured in a variety of embodiments depending on the specific area of application, whereby the main differences in the embodiments is in the type of material used. One version of the rescue bag 1 for rescue personnel is advantageously made from Kevlar® or Panox® mixed material, which is known for its durability, while an embodiment utilized for rescues from buildings is advantageously made from fiberglass. The outer coating 10 is formed from protective material of Kevlar® with a polyurethane carbon coating. The mat in the interior of the bag is from felt. Of course other suitable material having advantageous properties can be likewise used.